

Claims

What is claimed is:

1. A combustor, comprising:  
a combustion zone;  
a first liner bounding said combustion zone, said first liner having a first end portion and a second end portion spaced a defined distance from said first end portion;  
a first convector spaced apart from said first liner, said first convector having a first end portion and a second end portion spaced a defined distance from said first end portion, said first liner being disposed between said combustion zone and said first convector; and  
a plurality of passages positioned between said first liner and said first convector, at least one of said passages having a length that is greater than at least one of said defined distance of said first liner and said defined distance of said first convector.
2. The combustor of claim 1 wherein said plurality of passages are spiral passages.
3. The combustor of claim 1 wherein said plurality of passages are serpentine passages.
4. The combustor of claim 1 wherein said plurality of passages are three passages.
5. The combustor of claim 1 wherein at least one of said plurality of passages includes at least one cooling device positioned therein.

6. The combustor of claim 5 wherein said at least one cooling device is a dimple.

7. The combustor of claim 5 wherein said at least one cooling device is at least one of a trip strip, a fin, and a pin.

8. The combustor of claim 1 including:  
a second liner bounding said combustion zone, said second liner having a first end portion and a second end portion spaced a defined distance from said first end portion of said second liner;

a second convector spaced apart from said second liner, said second convector having a first end portion and a second end portion spaced a defined distance from said first end portion of said second convector, said second liner being disposed between said combustion zone and said second convector;  
and

a second plurality of passages positioned between said second liner and said second convector, at least one of said second plurality of passages having a length that is greater than at least one of said defined distance of said second liner and said defined distance of said second convector.

9. A gas turbine engine, comprising:  
a compressor;  
a combustor in fluid communication with said compressor, said combustor including:  
a combustion zone,  
a first liner bounding said combustion zone, said first liner having a first end portion and a second end portion spaced a defined distance from said first end portion,

a first convector spaced apart from said first liner, said first convector having a first end portion and a second end portion spaced a defined distance from said first end portion, said first liner being disposed between said combustion zone and said first convector, and

a plurality of passages positioned between said first liner and said first convector, at least one of said passages having a length that is greater than at least one of said defined distance of said first liner and said defined distance of said first convector; and

a turbine in fluid communication with said combustor.

10. The turbine engine of claim 9 wherein said plurality of passages are spiral passages.

11. The turbine engine of claim 9 wherein said plurality of passages are serpentine passages.

12. The turbine engine of claim 9 wherein said plurality of passages are three passages.

13. The turbine engine of claim 9 wherein at least one of said plurality of passages includes at least one cooling device positioned therein.

14. The turbine engine of claim 13 wherein said at least one cooling device is a dimple.

15. The turbine engine of claim 13 wherein said at least one cooling device is at least one of a trip strip, a fin, and a pin.

16. The turbine engine of claim 9 wherein said engine includes a serial cooling system.

17. The turbine engine of claim 9 wherein said combustor includes:

a second liner bounding said combustion zone, said second liner having a first end portion and a second end portion spaced a defined distance from said first end portion of said second liner;

a second convector spaced apart from said second liner, said second convector having a first end portion and a second end portion spaced a defined distance from said first end portion of said second convector, said second liner being disposed between said combustion zone and said second convector; and

a second plurality of passages positioned between said second liner and said second convector, at least one of said second plurality of passages having a length that is greater than at least one of said defined distance of said second liner and said defined distance of said second convector.

18. A method of cooling a liner of a combustor of a gas turbine engine, comprising:

directing a fluid between a first end portion of a first liner of a combustor and a first end portion of a first convector of a combustor, at least one of said first liner and said first convector having a central axis; and

causing said fluid to move in a direction nonparallel to said central axis.

19. The method of claim 18 wherein said causing said fluid to move in a direction nonparallel to said central axis includes causing said fluid to rotate about said central axis.

20. The method of claim 18 wherein said causing said fluid to move in a direction nonparallel to said central axis includes causing said fluid to move in a spiral path.

21. The method of claim 18 wherein said causing said fluid to move in a direction nonparallel to said central axis includes causing said fluid to move in a serpentine path.

22. The method of claim 18 wherein said causing said fluid to move in a direction nonparallel to said central axis is effectuated by a plurality of passages located between said first liner and said first convector.

23. A combustor, comprising:  
a combustion zone;  
a first liner bounding said combustion zone;  
a first convector spaced apart from said first liner, said first liner being disposed between said combustion zone and said first convector, at least one of said first liner and said first convector having a central axis;  
a fluid disposed between said first liner and said first convector;  
and  
means for causing said fluid to move in a direction nonparallel to said central axis.